

=> FILE REG

FILE 'REGISTRY' ENTERED AT 16:45:28 ON 21 FEB 2008

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2008 American Chemical Society (ACS)

=> D HIS

FILE 'REGISTRY' ENTERED AT 16:31:40 ON 21 FEB 2008

E CHLOROSULFONYL ISOCYANATE/CN

L1 1 S E3

E SULFUR TRIOXIDE/CN

L2 1 S E3

L3 362 S (S (L) O)/ELS (L) 2/ELC.SUB

E CYANOGEN CHLORIDE/CN

L4 1 S E3

FILE 'HCA' ENTERED AT 16:34:30 ON 21 FEB 2008

L5 11690 S L2

L6 126713 S L3

L7 1456 S L4

L8 1400 S L1

L9 49 S L1/P

L10 90 S (L5 OR L6) AND L7

L11 11 S L10 AND L8

L12 10 S L10 AND L9

L13 2277 S L2 (L) RACT/RL

L14 17742 S L3 (L) RACT/RL

L15 471 S L4 (L) RACT/RL

L16 10 S (L13 OR L14) AND L15

L17 7 S L16 AND L8

L18 7 S L16 AND L9

FILE 'REGISTRY' ENTERED AT 16:37:42 ON 21 FEB 2008

E CYANOGEN FLUORIDE/CN

L19 1 S E3

E CYANOGEN BROMIDE/CN

L20 1 S E3

E CYANOGEN IODIDE/CN

L21 1 S E3

FILE 'HCA' ENTERED AT 16:39:13 ON 21 FEB 2008

L22 3272 S L19 OR L20 OR L21

L23 53 S (L5 OR L6) AND L22

L24 1 S L23 AND L8

L25 1664 S (L19 OR L20 OR L21) (L) RACT/RL  
 L26 10 S (L13 OR L14) AND L25  
 L27 0 S L26 AND L8  
 L28 14 S L11 OR L12 OR L16 OR L17 OR L18 OR L24

=> FILE HCA  
 FILE 'HCA' ENTERED AT 16:45:37 ON 21 FEB 2008  
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
 PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
 COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

=> D L28 1-14 BIB ABS HITSTR HITIND

L28 ANSWER 1 OF 14 HCA COPYRIGHT 2008 ACS on STN  
 AN 143:99273 HCA Full-text  
 TI Method for producing chlorosulfonyl isocyanate  
 IN Sugawara, Mutsumi; Imagawa, Tsutomu; Masui, Fumitaka  
 PA Nippon Soda Co., Ltd., Japan  
 SO PCT Int. Appl., 10 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005058806	A1	20050630	WO 2004-JP19132	20041215
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1695958	A1	20060830	EP 2004-807489		

200412  
15

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
PL, SK, BA, HR, IS, YU

CN 1894205 A 20070110 CN 2004-80037354

200412  
15

IN 2006KN01591 A 20070504 IN 2006-KN1591

200606  
08

KR 783343 B1 20071207 KR 2006-711648

200606  
13

US 2007286789 A1 20071213 US 2007-583194

200706  
19

PRAI JP 2003-417611 A 20031216

WO 2004-JP19132 W 20041215

OS CASREACT 143:99273

AB This document discloses a method for producing chlorosulfonyl isocyanate wherein chlorocyanogen is reacted with sulfur trioxide to form chlorosulfonyl isocyanate, characterized in that chlorosulfonyl isocyanate or a fluid contg. chlorosulfonyl isocyanate is used as a solvent for the reaction, and approx. equimolar amts. of sulfur trioxide and chlorocyanogen, which are resp. dild. with chlorosulfonyl isocyanate or a fluid contg. chlorosulfonyl isocyanate, are simultaneously fed under reflux to the reaction system. The above method can be used for producing chlorosulfonyl isocyanate (purity : 99%) in high yield and with good operability while achieving savings in the equipment and in the effort for temp. control.

IT 506-77-4, Chlorocyanogen 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(method for producing chlorosulfonyl isocyanate by reaction of chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate as solvent)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

Cl--C≡N

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PUR  
(Purification or recovery); PREP (Preparation); USES (Uses)  
(reactant and solvent; method for producing chlorosulfonyl  
isocyanate by reaction of chlorocyanogen with sulfur trioxide in  
chlorosulfonyl isocyanate as solvent)  
RN 1189-71-5 HCA  
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IC ICM C07C303-34  
ICS C07C307-00  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
IT 506-77-4, Chlorocyanogen 7446-11-9, Sulfur  
trioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(method for producing chlorosulfonyl isocyanate by reaction of  
chlorocyanogen with sulfur trioxide in chlorosulfonyl isocyanate  
as solvent)  
IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PUR  
(Purification or recovery); PREP (Preparation); USES (Uses)  
(reactant and solvent; method for producing chlorosulfonyl  
isocyanate by reaction of chlorocyanogen with sulfur trioxide in  
chlorosulfonyl isocyanate as solvent)  
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT  
L28 ANSWER 2 OF 14 HCA COPYRIGHT 2008 ACS on STN  
AN 142:197901 HCA Full-text  
TI Product class 13: quinazolines  
AU Kikelj, D.

CS Germany  
SO Science of Synthesis (2004), 16, 573-749  
CODEN: SSCYJ9  
PB Georg Thieme Verlag  
DT Journal; General Review  
LA English  
AB A review. Prepn. of quinazolines by ring closure and ring transformation reactions as well as aromatization and substituent modification is given.  
IT 7446-09-5, Sulfur dioxide, uses  
RL: CAT (Catalyst use); USES (Uses)  
(prepn. of quinazolines)  
RN 7446-09-5 HCA  
CN Sulfur dioxide (CA INDEX NAME)



IT 506-68-3, Cyanogen bromide ((CN)Br) 506-77-4,  
Cyanogen chloride ((CN)Cl) 1189-71-5, Sulfuryl chloride  
isocyanate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of quinazolines)  
RN 506-68-3 HCA  
CN Cyanogen bromide ((CN)Br) (CA INDEX NAME)



RN 506-77-4 HCA  
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



RN 1189-71-5 HCA  
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



CC 28-0 (Heterocyclic Compounds (More Than One Hetero Atom))

IT 67-72-1 77-48-5 84-58-2 93-59-4, Benzenecarboperoxoic acid  
 94-36-0, uses 98-09-9, Benzenesulfonyl chloride 102-69-2  
 109-95-5 110-86-1, Pyridine, uses 118-75-2, uses 128-08-5  
 143-33-9, Sodium cyanide (Na(CN)) 144-55-8, Carbonic acid  
 monosodium salt, uses 333-20-0 429-41-4 459-73-4 501-65-5  
 540-69-2 546-67-8 590-28-3 598-41-4 603-35-0, uses  
 657-84-1 762-21-0 865-33-8 865-47-4 872-50-4, uses  
 999-97-3 1020-84-4 1066-33-7, Ammonium bicarbonate 1112-67-0  
 1122-58-3 1309-48-4, Magnesium oxide (MgO), uses 1313-13-9,  
 Manganese oxide (MnO2), uses 1313-82-2, Sodium sulfide (Na2S),  
 uses 1333-82-0, Chromium oxide (CrO3) 1455-13-6, Methanol-d  
 1499-10-1 1576-35-8 1762-95-4 2052-49-5, Tetrabutylammonium  
 hydroxide 2311-91-3 3481-12-7, Sodium naphthalenide, uses  
 4039-32-1 5470-11-1 6674-22-2 7181-87-5 7439-89-6, Iron,  
 uses 7440-23-5, Sodium, uses 7440-66-6, Zinc, uses  
 7446-09-5, Sulfur dioxide, uses 7450-69-3 7550-45-0,  
 Titanium chloride (TiCl4) (T-4)-, uses 7601-90-3, Perchloric acid,  
 uses 7631-86-9, Silica, uses 7631-90-5 7646-78-8, uses  
 7646-85-7, Zinc chloride (ZnCl2), uses 7647-14-5, Sodium chloride  
 (NaCl), uses 7681-82-5, Sodium iodide (NaI), uses 7697-37-2,  
 Nitric acid, uses 7705-07-9, Titanium chloride (TiCl3), uses  
 7705-08-0, Iron chloride (FeCl3), uses 7719-09-7, Thionyl chloride  
 7719-12-2, Phosphorous trichloride 7723-14-0, Phosphorus, uses  
 7727-54-0 7757-79-1, Nitric acid potassium salt, uses 7758-02-3,  
 Potassium bromide (KBr), uses 7761-88-8, Nitric acid silver(1+)  
 salt, uses 7772-99-8, Tin chloride (SnCl2), uses 7782-44-7,  
 Oxygen, uses 7782-49-2, Selenium, uses 7782-50-5, Chlorine, uses  
 7782-92-5, Sodium amide (Na(NH2)) 7783-93-9 7789-20-0, Water-d2  
 7789-60-8, Phosphorous tribromide 7790-94-5, Chlorosulfuric acid  
 7803-49-8, Hydroxylamine, uses 10026-13-8 10028-15-6, Ozone,  
 uses 10034-85-2, Hydriodic acid 10035-10-6, Hydrobromic acid,  
 uses 10294-33-4 10544-50-0, uses 12027-06-4, Ammonium iodide  
 13746-66-2 13826-86-3 13840-56-7, Sodium borate 14014-06-3,  
 Sodium hydroxide (Na(OH)) 14217-21-1, Trisodium hexacyanoferrate  
 15525-45-8 15857-57-5 16721-80-5, Sodium sulfide (Na(SH))  
 17242-52-3, Potassium amide (K(NH2)) 20667-12-3, Silver oxide  
 (Ag2O) 21908-53-2, Mercury oxide (HgO) 26386-88-9 26628-22-8,  
 Sodium azide (Na(N3)) 29154-12-9 337913-25-4 573672-35-2,

Sodium peroxide (Na(O2))

RL: CAT (Catalyst use); USES (Uses)

(prepn. of quinazolines)

IT 50-00-0, Formaldehyde, reactions 55-21-0, Benzamide 59-48-3  
60-34-4 60-35-5, Acetamide, reactions 62-53-3, Benzenamine,  
reactions 62-55-5, Ethanethioamide 62-56-6, Thiourea, reactions  
64-17-5, Ethanol, reactions 64-18-6, Formic acid, reactions  
64-19-7, Acetic acid, reactions 64-67-5 65-45-2 66-99-9,  
2-Naphthalenecarboxaldehyde 67-56-1, Methanol, reactions  
67-64-1, 2-Propanone, reactions 67-66-3, reactions 70-11-1  
71-23-8, 1-Propanol, reactions 71-36-3, 1-Butanol, reactions  
74-88-4, reactions 74-89-5, Methanamine, reactions 74-90-8,  
Hydrocyanic acid, reactions 74-96-4 75-03-6 75-05-8,  
Acetonitrile, reactions 75-07-0, Acetaldehyde, reactions  
75-15-0, Carbon disulfide, reactions 75-24-1 75-36-5, Acetyl  
chloride 75-44-5, Carbonic dichloride 75-52-5, reactions  
75-77-4, reactions 75-87-6 75-98-9 77-78-1 78-39-7  
78-83-1, reactions 78-93-3, 2-Butanone, reactions 79-04-9  
79-05-0, Propanamide 79-22-1 80-48-8 80-62-6 84-26-4  
87-25-2 88-68-6 89-77-0 91-56-5, 1H-Indole-2,3-dione 93-97-0  
95-92-1 96-32-2 97-39-2 98-74-8 98-83-9, reactions  
98-86-2, reactions 98-88-4, Benzoyl chloride 98-92-0,  
3-Pyridinecarboxamide 100-10-7 100-36-7 100-39-0 100-44-7,  
reactions 100-46-9, Benzenemethanamine, reactions 100-47-0,  
Benzonitrile, reactions 100-48-1, 4-Pyridinecarbonitrile  
100-52-7, Benzaldehyde, reactions 100-54-9, 3-Pyridinecarbonitrile  
100-58-3 100-61-8, reactions 101-99-5 102-06-7 102-85-2  
103-71-9, reactions 103-72-0 103-76-4, 1-Piperazineethanol  
103-81-1, Benzeneacetamide 103-84-4 104-85-8 104-88-1,  
reactions 104-94-9 105-36-2 105-39-5 105-53-3 105-56-6  
106-49-0, reactions 106-95-6, reactions 107-10-8, Propylamine,  
reactions 107-12-0, Propanenitrile 107-14-2 107-19-7,  
2-Propyn-1-ol 107-59-5 107-92-6, Butanoic acid, reactions  
108-24-7 109-51-3, Pentanimidamide 109-65-9 109-72-8,  
reactions 109-73-9, 1-Butanamine, reactions 109-75-1,  
3-Butenenitrile 110-91-8, Morpholine, reactions 113-00-8,  
Guanidine 115-08-2, Methanethioamide 115-80-0 116-15-4  
118-48-9, 2H-3,1-Benzoxazine-2,4(1H)-dione 118-74-1 118-92-3  
120-14-9 120-92-3, Cyclopentanone 120-94-5 121-44-8, reactions  
121-45-9 122-51-0 122-52-1 123-11-5, reactions 123-75-1,  
Pyrrolidine, reactions 124-38-9, Carbon dioxide, reactions  
124-40-3, reactions 124-41-4 124-63-0, Methanesulfonyl chloride  
126-98-7 134-20-3 135-02-4 139-02-6 140-29-4,  
Benzeneacetonitrile 140-89-6 141-43-5, reactions 141-52-6  
141-97-9 143-37-3, Ethanimidamide 147-47-7 271-44-3,  
1H-Indazole 290-87-9, 1,3,5-Triazine 334-88-3 353-42-4  
357-83-5 369-57-3 394-47-8 407-25-0 420-04-2, Cyanamide

445-27-2 459-44-9 461-58-5 463-52-5, Methanimidamide  
 463-58-1, Carbon oxide sulfide (COS) 479-33-4 496-15-1  
 504-74-5, Imidazolidine 506-68-3, Cyanogen bromide  
 ((CN)Br) 506-77-4, Cyanogen chloride ((CN)Cl) 507-09-5,  
 Ethanethioic acid, reactions 513-35-9 525-76-8 529-23-7  
 533-68-6 535-11-5 536-90-3 541-41-3 542-69-8 544-92-3,  
 Copper cyanide (Cu(CN)) 551-93-9 555-16-8, reactions 556-56-9  
 556-64-9 563-47-3 563-83-7 574-17-4 587-65-5 591-51-5  
 598-21-0 604-75-1 606-18-8 607-69-2 609-15-4 609-65-4  
 609-85-8 610-68-4 612-24-8 614-76-6 616-38-6 617-90-3,  
 2-Furancarboxynitrile 618-39-3, Benzenecarboximidamide 619-72-7  
 621-06-7 621-30-7 622-16-2 623-49-4 626-36-8 626-67-5  
 627-26-9 628-17-1 628-73-9, Hexanenitrile 630-08-0, Carbon  
 monoxide, reactions 636-04-4 645-54-5, Benzeneethanethioamide  
 670-54-2, Ethenetetracarbonitrile, reactions 693-02-7, 1-Hexyne  
 693-03-8 705-62-4 719-59-5 747-48-8 762-42-5 766-05-2,  
 Cyclohexanecarbonitrile 771-99-3 784-45-2 811-51-8 828-51-3  
 873-74-5 888-71-1 917-64-6 922-64-5 922-67-8 925-90-6  
 926-64-7 933-52-8 951-48-4 954-91-6 996-82-7 1000-84-6  
 1121-60-4, 2-Pyridinecarboxaldehyde 1122-85-6 1125-43-5  
 1187-46-8 1189-71-5, Sulfuryl chloride isocyanate  
 1192-95-6 1199-00-4 1206-17-3 1206-55-9 1424-52-8  
 1441-87-8 1467-79-4 1527-91-9 1530-88-7, 1-  
 Pyrrolidinecarbonitrile 1530-89-8, 4-Morpholinecarbonitrile  
 1589-82-8 1614-92-2 1640-52-4 1640-59-1 1663-61-2  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of quinoxalines)

RE.CNT 1014 THERE ARE 1014 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L28 ANSWER 3 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 138:136934 HCA Full-text

TI Preparation of high-purity chlorosulfonyl isocyanate with high yield  
 and safety

IN Nakamura, Akira; Hasegawa, Hiroshi; Kon, Kazushige; Iwata, Masaki

PA Kuraray Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----				

PI JP 2003040854 A 20030213 JP 2001-229825

200107  
 30



PRAI JP 2001-229825

20010730

OS CASREACT 138:136934

AB ClSO<sub>2</sub>NCO is prep'd. by (1) condensation of CNCl with SO<sub>3</sub>, (2) distn. of the reaction mixt. under ambient pressure, and (3) distn. of the crude ClSO<sub>2</sub>NCO under ambient pressure. The residue obtained in the 2nd step is distd. under ambient pressure, then the obtained distillates are mixed with low-b. distillates obtained in the 2nd and 3rd steps, and residues of the 3rd step, and returned to the reaction mixt. of the 1st step. By this method, the vol. of waste solns. contg. toxic substances is much smaller than conventional method.

IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: IMF (Industrial manufacture); PUR (Purification or recovery);  
PREP (Preparation)  
(prepn. of high-purity ClSO<sub>2</sub>NCO from CNCl and SO<sub>3</sub> with recovering and reusing low-b. distillates)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride 7446-11-9, Sulfuric anhydride, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(prepn. of high-purity ClSO<sub>2</sub>NCO from CNCl and SO<sub>3</sub> with recovering and reusing low-b. distillates)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IC ICM C07C303-36  
 ICS C07C311-65  
 CC 23-12 (Aliphatic Compounds)  
 IT 1189-71-5P, Chlorosulfonyl isocyanate  
 RL: IMF (Industrial manufacture); PUR (Purification or recovery);  
 PREP (Preparation)  
 (prepn. of high-purity ClSO<sub>2</sub>NCO from CNCl and SO<sub>3</sub> with recovering  
 and reusing low-b. distillates)  
 IT 506-77-4, Cyanogen chloride 7446-11-9, Sulfuric  
 anhydride, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (prepn. of high-purity ClSO<sub>2</sub>NCO from CNCl and SO<sub>3</sub> with recovering  
 and reusing low-b. distillates)

L28 ANSWER 4 OF 14 HCA COPYRIGHT 2008 ACS on STN  
 AN 132:167972 HCA Full-text  
 TI Preparation of chlorosulfonyl isocyanate with high yield  
 IN Ogawa, Takeshi; Yano, Koji  
 PA Sumitomo Chemical Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	
PI	JP 2000053630	A	20000222	JP 1999-132570	199905 13
PRAI	JP 1998-132146	A	19980514		
	JP 1998-151237	A	19980601		
AB	Title compd. is prepd. by reaction of cyanogen chloride with sulfur trioxide in the presence of the same compd. at a temp. range of -10°-17°.				
IT	506-77-4, Cyanogen chloride RL: RCT (Reactant); RACT (Reactant or reagent) (for prepn. of chlorosulfonyl isocyanate with high yield)				
RN	506-77-4 HCA				
CN	Cyanogen chloride ((CN)Cl) (CA INDEX NAME)				

Cl—C≡N

IT 1189-71-5P, Chlorosulfonyl isocyanate  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (prepn. of chlorosulfonyl isocyanate with high yield)  
 RN 1189-71-5 HCA  
 CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (γ-type; for prepn. of chlorosulfonyl isocyanate with high yield)  
 RN 7446-11-9 HCA  
 CN Sulfur trioxide (CA INDEX NAME)



IC ICM C07C307-00  
 ICS C07C303-06  
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
 IT 506-77-4, Cyanogen chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for prepn. of chlorosulfonyl isocyanate with high yield)  
 IT 1189-71-5P, Chlorosulfonyl isocyanate  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (prepn. of chlorosulfonyl isocyanate with high yield)  
 IT 7446-11-9, Sulfur trioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (γ-type; for prepn. of chlorosulfonyl isocyanate with high yield)  
 L28 ANSWER 5 OF 14 HCA COPYRIGHT 2008 ACS on STN  
 AN 118:236411 HCA [Full-text](#)  
 TI Process and apparatus for continuous preparation of chlorosulfonyl isocyanate  
 IN Cieslewski, Tomasz; Chuck, Roderick; Gross, Max; Galli, Marco Paolo  
 PA Lonza AG, Switz.

SO Patentschrift (Switz.), 5 pp.

CODEN: SWXXAS

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CH 680292	A5	19920731	CH 1990-3195	19901004

PRAI CH 1990-3195 19901004

AB The title process for prepn. of  $\text{ClSO}_2\text{NCO}$  (I) involves: (1) reaction of  $\text{SO}_3(\text{g})$  with  $\text{ClCN}(\text{g})$  [mol ratio (1.1-1.7):1] at 30-160° in a I-contg., liq.-filled reaction zone; (2) removal of resulting reaction heat by a distn. column; (3) cooling of vapors exiting the column to 110° and condensation in a 1st cooling zone; (4) feeding part of the resultant crude I condensate to the lift zone of a 2nd distn. column, and recycling the other part to the 1st column; and (5) taking off pure I between the lift and drip zones of the 2nd column, and condensing it in a cooling zone. An app. diagram is given.

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: PREP (Preparation)  
(manuf. of, process and app. for)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with cyanogen chloride, process and app. for)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfur trioxide, process and app. for)  
 RN 506-77-4 HCA  
 CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

Cl--C≡N

IC ICM C07C311-65  
 ICS B01J012-00  
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
 Section cross-reference(s): 23  
 IT 1189-71-5P, Chlorosulfonyl isocyanate  
 RL: PREP (Preparation)  
 (manuf. of, process and app. for)  
 IT 7446-11-9, Sulfur trioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, process and app. for)  
 IT 506-77-4, Cyanogen chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfur trioxide, process and app. for)

L28 ANSWER 6 OF 14 HCA COPYRIGHT 2008 ACS on STN  
 AN 117:170790 HCA Full-text  
 TI Preparation of chlorosulfonyl isocyanate  
 IN Nakamura, Akira; Ono, Matsuo; Ataka, Toshihide  
 PA Kuraray Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	
PI	JP 04164063	A	19920609	JP 1990-292531	199010 29
	JP 3161723	B2	20010425		
PRAI	JP 1990-292531		19901029		
OS	CASREACT 117:170790				
AB	The title compd. (I) is prepd. by treating SO3 with ClCN in Cl-3 chloro-contg. satd. hydrocarbons at 10-50°. A reactor contg. CH2Cl2 was simultaneously fed with SO3 and ClCN at 25-35° over 4 h, then				

stirred at 25-30° for 1 h to give 89% I (based on ClCN) of 98% purity.

IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, from sulfuric anhydride and cyanogen chloride)  
RN 1189-71-5 HCA  
CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfuric anhydride, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with cyanogen chloride, chlorosulfonyl isocyanate from, solvents in)  
RN 7446-11-9 HCA  
CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with sulfuric anhydride, chlorosulfonyl isocyanate from, solvents in)  
RN 506-77-4 HCA  
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C381-00  
CC 23-12 (Aliphatic Compounds)  
IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, from sulfuric anhydride and cyanogen chloride)  
IT 7446-11-9, Sulfuric anhydride, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, chlorosulfonyl isocyanate  
 from, solvents in)

IT 506-77-4, Cyanogen chloride

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfuric anhydride, chlorosulfonyl isocyanate  
 from, solvents in)

L28 ANSWER 7 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 112:79957 HCA Full-text

TI Preparation of chlorosulfonyl isocyanate

IN Nakamura, Akira; Ono, Matsuo; Ataka, Toshihide; Noguchi, Shizuo;

Shirakawa, Hideo; Segawa, Hirozo

PA Kyowa Gas Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	JP 01228955	A	19890912	JP 1988-55404	198803 09
	JP 05079059	B	19931101		
	CA 2024796	A1	19920307	CA 1990-2024796	199009 06
	CA 2024796	C	20010227		
	US 5118487	A	19920602	US 1990-580868	199009 11

PRAI JP 1988-55404 19880309

AB ClSO<sub>2</sub>NCO, useful in the manuf. of agrochems., pharmaceuticals,  
 sweeteners, resins, etc., is prepd. from CNCl and SO<sub>3</sub> at 10-50°.  
 Adding 61.5 g CNCl and 73.1 g SO<sub>3</sub> to 8 g SO<sub>3</sub> at 25-35° during 4-5 h  
 and stirring 1 h gave 87% ClSO<sub>2</sub>NCO.

IT 1189-71-5P, Chlorosulfonyl isocyanate

RL: IMF (Industrial manufacture); PREP (Preparation)  
 (prepn. of, from cyanogen chloride and sulfur trioxide)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, chlorosulfonyl isocyanate  
 from)  
 RN 7446-11-9 HCA  
 CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfur trioxide, chlorosulfonyl isocyanate  
 from)  
 RN 506-77-4 HCA  
 CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C161-00  
 CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
 Section cross-reference(s): 23  
 IT 1189-71-5P, Chlorosulfonyl isocyanate  
 RL: IMF (Industrial manufacture); PREP (Preparation)  
 (prepn. of, from cyanogen chloride and sulfur trioxide)  
 IT 7446-11-9, Sulfur trioxide, reactions  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, chlorosulfonyl isocyanate  
 from)  
 IT 506-77-4, Cyanogen chloride  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfur trioxide, chlorosulfonyl isocyanate  
 from)



L28 ANSWER 8 OF 14 HCA COPYRIGHT 2008 ACS on STN  
 AN 111:9240 HCA Full-text  
 TI Continuous gas-phase manufacture of chlorosulfonyl isocyanate  
 IN Niermann, Hermann; Diskowski, Herbert; Roszinski, Hilmar; Tiedemann,  
 Jens; Martin, Willi  
 PA Hoechst A.-G., Fed. Rep. Ger.  
 SO Eur. Pat. Appl., 7 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	EP 294613	A1	19881214	EP 1988-107713	198805 13
	EP 294613	B1	19910327		
	R: AT, BE, CH, DE, ES, FR, GB, IT, LI, NL				
	DE 3719303	A1	19881229	DE 1987-3719303	198706 10
	AT 62010	T	19910415	AT 1988-107713	198805 13
PRAI	DE 1987-3719303	A	19870610		
	EP 1988-107713	A	19880513		
AB	Chlorosulfonyl isocyanate is prepd. in a continuous multistep process by the gas-phase reaction of a 1:1 molar ratio of SO3 and ClCN (prepd. from aq. HCN and Cl). A process schematic is presented.				
IT	1189-71-5P, Chlorosulfonyl isocyanate RL: PREP (Preparation) (manuf. of, from chlorocyanide and sulfur trioxide, gas-phase)				
RN	1189-71-5 HCA				
CN	Sulfuryl chloride isocyanate (CA INDEX NAME)				



IT 506-77-4P, Chlorocyanide  
 RL: PREP (Preparation)

(prepn. and gas-phase reaction of, with sulfur trioxide)  
RN 506-77-4 HCA  
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

Cl---C $\equiv$ N

IT 7446-11-9, Sulfur trioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with chlorocyanide, gas-phase)  
RN 7446-11-9 HCA  
CN Sulfur trioxide (CA INDEX NAME)



IC ICM C07C143-828  
CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)  
Section cross-reference(s): 23, 48  
IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: PREP (Preparation)  
(manuf. of, from chlorocyanide and sulfur trioxide, gas-phase)  
IT 506-77-4P, Chlorocyanide  
RL: PREP (Preparation)  
(prepn. and gas-phase reaction of, with sulfur trioxide)  
IT 7446-11-9, Sulfur trioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with chlorocyanide, gas-phase)

L28 ANSWER 9 OF 14 HCA COPYRIGHT 2008 ACS on STN  
AN 109:230287 HCA Full-text  
TI Manufacture of chlorosulfonyl isocyanate  
IN Nakamura, Akira; Ono, Matsuo; Segawa, Hirozo  
PA Kyowa Gas Chemical Industry Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 4 pp.  
CODEN: JKXXAF

DT Patent  
LA Japanese  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
-----				

PI JP 63077855 A 19880408 JP 1986-219412

198609  
19

JP 07002709 B 19950118  
PRAI JP 1986-219412 19860919

AB In the manuf. of the title compd. (I) from SO<sub>3</sub> and CNCl, CNCl is added to SO<sub>3</sub>(l) and the reaction is carried out at 20-50°. The compd. is useful as intermediate for pharmaceuticals, agrochems., and sweeteners, and as modifiers for synthetic fibers and resins. Thus, 62.9 g CNCl(g) was introduced over 2 h into 79.5 g γ-SO<sub>3</sub>(l) at 25-35° with stirring and the mixt. was further stirred at 25-30° for 0.5 h to give 119.1 g I.

IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, from sulfur trioxide and cyanogen chloride, temp. control in)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with cyanogen chloride)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with sulfur trioxide)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IC ICM C07C161-00  
ICS C01C003-14  
CC 23-12 (Aliphatic Compounds)  
IT 1189-71-5P, Chlorosulfonyl isocyanate  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(prepn. of, from sulfur trioxide and cyanogen chloride, temp.  
control in)  
IT 7446-11-9, Sulfur trioxide, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with cyanogen chloride)  
IT 506-77-4, Cyanogen chloride  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with sulfur trioxide)

L28 ANSWER 10 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 101:180948 HCA Full-text

OREF 101:27225a,27228a

TI Final state distributions in the photodissociation of triatomic  
molecules

AU Bersohn, R.

CS Dep. Chem., Columbia Univ., New York, NY, 10027, USA

SO Journal of Physical Chemistry (1984), 88(22), 5145-9

CODEN: JPCCHX; ISSN: 0022-3654

DT Journal

LA English

AB The theor. core of photodissocn. dynamics is the process  $ABC + h\nu \rightarrow A + BC$ . A no. of final state distributions for this process were measured. In order to compare these diverse distributions the av. fractions of the available energy released into vibration, rotation, and translation were calcd. From a triangular plot of these data 2 general conclusions emerge. The first is that release of a large fraction of the available energy as rotation is rare. The second is that photodissocn. of mols. in which a single bond is broken results in relatively high translational energy release whereas for mols. in which a double bond is broken most of the available energy is released as vibration.

IT 506-77-4 7446-09-5, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(energy partitioning during photodissocn. of, calcns. for)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

RN 7446-09-5 HCA  
CN Sulfur dioxide (CA INDEX NAME)

O=S=O

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 73

IT 74-88-4, reactions 74-90-8, reactions 75-15-0, reactions  
124-38-9, reactions 463-58-1 506-68-3 506-77-4  
506-78-5 2696-92-6 7446-09-5, reactions 7732-18-5,  
reactions 7772-99-8, reactions 7783-06-4, reactions  
10028-15-6, reactions 10102-44-0, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(energy partitioning during photodissocn. of, calcns. for)

L28 ANSWER 11 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 81:70824 HCA Full-text

OREF 81:11243a,11246a

TI Chemical lasers produced from O(3P) atom reactions. IV. Carbon  
monoxide laser emission from the oxygen atom + cyanogen reaction

AU Shortridge, R. G.; Lin, M. C.

CS Chem. Div., Nav. Res. Lab., Washington, DC, USA

SO Journal of Physical Chemistry (1974), 78(15), 1451-6

CODEN: JPCHAX; ISSN: 0022-3654

DT Journal

LA English

AB CO ir stimulated emission was obsd. from flash-initiated SO<sub>2</sub> + XCN (X  
= Br, Cl, and CN) mixts. About 36 P(J) lines of vibrational-  
rotational transitions were present between Δv (13-12) and Δv (5-4).  
Diln. in SF<sub>6</sub> greatly enhanced the laser emission, whereas only slight  
enhancement was obtained from such diluents as Ar and He. Mass  
spectrometric anal. showed that .apprx.20% conversion of XCN occurred  
per 5 flashes at 2.1 kJ and that CO, NO, CO<sub>2</sub>, and probably some N<sub>2</sub>  
were produced. The reaction, O(3P) + CN(X<sup>2</sup>Σ) → CO.dag. + N(4S),  
ΔH<sub>1</sub><sup>o</sup> = -74 kcal/mol, was the major pumping reaction of this system,  
and O(3P) + CN → N(2D) + CO.dag., ΔH<sub>2</sub><sup>o</sup> = -19 kcal/mol, was  
unimportant on the basis of these laser emission measurements.

IT 506-77-4

RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction of, with sulfur dioxide, carbon monoxide laser emission

from flash-initiated)  
RN 506-77-4 HCA  
CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)

C1---C $\equiv$ N

IT 7446-09-5, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(with cyanogen compds., carbon monoxide laser emission from  
flash-initiated)  
RN 7446-09-5 HCA  
CN Sulfur dioxide (CA INDEX NAME)

O $\equiv$ S $\equiv$ O

CC 73-6 (Spectra by Absorption, Emission, Reflection, or Magnetic  
Resonance, and Other Optical Properties)  
Section cross-reference(s): 74  
IT 460-19-5 506-68-3 506-77-4  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with sulfur dioxide, carbon monoxide laser emission  
from flash-initiated)  
IT 7446-09-5, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(with cyanogen compds., carbon monoxide laser emission from  
flash-initiated)

L28 ANSWER 12 OF 14 HCA COPYRIGHT 2008 ACS on STN  
AN 78:151993 HCA Full-text  
OREF 78:24387a,24390a  
TI Reaction of sulfite ions with cyanogen chloride  
AU Bailey, Peter L.; Bishop, Edmund  
CS Chem. Dep., Univ. Exeter, Exeter, UK  
SO Journal of the Chemical Society, Dalton Transactions: Inorganic  
Chemistry (1972-1999) (1973), (9), 917-21  
CODEN: JCDBTI; ISSN: 0300-9246  
DT Journal  
LA English  
AB Reaction of ClCN with SO<sub>3</sub>2- involved formation of a stable adduct.  
The kinetics of formation and decompn. of the adduct were detd., a  
reaction scheme proposed, and activation energies detd.

IT 14265-45-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, kinetics and mechanism of)  
 RN 14265-45-3 HCA  
 CN Sulfite (8CI, 9CI) (CA INDEX NAME)



IT 506-77-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfite, kinetics and mechanism of)  
 RN 506-77-4 HCA  
 CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



CC 67-3 (Catalysis and Reaction Kinetics)  
 IT 14265-45-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with cyanogen chloride, kinetics and mechanism of)  
 IT 506-77-4  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction of, with sulfite, kinetics and mechanism of)

L28 ANSWER 13 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 51:91123 HCA Full-text

OREF 51:16569i,16570a-c

TI New compounds containing nitrogen and sulfur

PA Farberke Hoechst AG vorm. Meister Lucius & Bruning

DT Patent

LA Unavailable

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	
PI	GB 774276		19570508	GB 1953-8087	

195303

24

GI For diagram(s), see printed CA Issue.

AB Depending upon reaction conditions, one or more of the following compounds may be produced by treating SO<sub>3</sub> with CNCl: OCNSO<sub>2</sub>Cl (I), OCNSO<sub>2</sub>OSO<sub>2</sub>Cl (II), and O.CCl:N.SO<sub>2</sub>N:CCl (III). These compds. are useful as intermediates in the manuf. of textile assistants, pesticides, and pharmaceutical products. I may be prep'd. in the following ways: by treating CNCl with SO<sub>3</sub> in a 1:1 molar ratio at 100 to 200°C., by distg. II at atm. pressure, by treating II with CNCl in a 1:1 molar ratio at 120-40°, or by heating II and III in equimolar proportions at 120-50°. II is obtained by filtering the product obtained by treating SO<sub>3</sub> with CNCl at 0° to -30°. From this same reaction product, III is obtained by distn. I, b<sub>94</sub>, 52°, d<sub>20</sub> 1.626, reacts with H<sub>2</sub>O violently yielding equimolar quantities of HCl, CO<sub>2</sub>, and amidosulfonic acid; II b<sub>12</sub> of 67-8°, d<sub>20</sub> 1.792, reacts with H<sub>2</sub>O to yield equimolar quantities of H<sub>2</sub>SO<sub>4</sub>, HCl, CO<sub>2</sub> and amidosulfonic acid. When II is heated to 130-50°, it decomp. to SO<sub>3</sub> and I. III sublims at 120° at atm. pressure, reacts with H<sub>2</sub>O slowly to yield 1 mole SO<sub>2</sub>(NH<sub>2</sub>)<sub>2</sub>, 2 moles HCl, and 2 moles of CO<sub>2</sub>. When heated in a closed capillary, III liquifies between 120 and 130°, the melt consisting of a mixt. of CNCl, cyanuric chloride, and I.

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid  
 RL: PREP (Preparation)  
 (prepn. of)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
 (reaction with SO<sub>3</sub>)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide  
 (reactions of, with ClCN)

RN 7446-11-9 HCA



CN Sulfur trioxide (CA INDEX NAME)



CC 10 (Organic Chemistry)  
IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid 15435-13-9P, 1,4,3,5-Oxathiadiazine, 2,6-dichloro-, 4,4-dioxide  
RL: PREP (Preparation)  
(prepn. of)  
IT 506-77-4, Cyanogen chloride  
(reaction with SO<sub>3</sub>)  
IT 7446-11-9, Sulfur trioxide  
(reactions of, with ClCN)

L28 ANSWER 14 OF 14 HCA COPYRIGHT 2008 ACS on STN

AN 51:12977 HCA Full-text

OREF 51:2816c-g

TI The reaction of cyanogen chloride with sulfur trioxide

AU Graf, Roderich

CS Farbwerke Hoechst, Frankfurt a.M.-Hochst, Germany

SO Chemische Berichte (1956), 89, 1071-9

CODEN: CHBEAM; ISSN: 0009-2940

DT Journal

LA Unavailable

AB Passing about 1920 g. SO<sub>3</sub> slowly into 910 g. CNCl first at -5°, later at -15°, in a described app., if necessary adding more CNCl to avoid an excess of SO<sub>3</sub>, causes the sepn. of 610 g. ClC:N.SO<sub>2</sub>N:CCl.O (I), long needles, m. about 150° (sealed tube). When heated slowly I decomp. at 120-30° with the formation of OC:NSO<sub>2</sub>Cl (II), and CNCl. I is fairly stable in dry air; with H<sub>2</sub>O I decomp. with the formation of CO<sub>2</sub>, HCl, and (H<sub>2</sub>N)2SO<sub>2</sub>. Fractional distn. of the original filtrate at 95-100 mm. gives about 260 g. II, b. 50-4°, and 2100 g. OC:NSO<sub>2</sub>OSO<sub>2</sub>Cl (III), b<sub>12</sub> 66-70°. Adding dropwise 110 g. SO<sub>2</sub> to 123 g. CNCl in 200 cc. liq. SO<sub>2</sub> at -20 to -25° and filtering the soln. give 105 g. I; fractional distn. of the mother liquor gives a small amt. of II and 88 g. III, b<sub>10</sub> 63-4°, leaving a few g. I as a residue. Heating the reaction mixt. of 1110 g. CNCl and 1920 g. SO<sub>3</sub> slowly to 120-5° while simultaneously passing CNCl into the mixt. gives 3200 g. II which is also formed when equimolar amts. of CNCl and SO<sub>3</sub> are allowed to react without cooling. II b<sub>94</sub> 52°, b. 106-7°, d<sub>20</sub> 1.626, n<sub>27D</sub> 1.4435; II is stable in closed containers, with H<sub>2</sub>O it reacts explosively; in contact with ice, II forms CO<sub>2</sub>, HCl, and H<sub>2</sub>NSO<sub>3</sub>H, m.

204-5°. II absorbs H<sub>2</sub>O with the formation of HO<sub>2</sub>CNHSO<sub>2</sub>Cl which decomp. to CO<sub>2</sub> and H<sub>2</sub>NSO<sub>2</sub>Cl; the latter with H<sub>2</sub>O gives HCl and H<sub>2</sub>NSO<sub>3</sub>H. III b12 67-8°, m. -32°, d<sub>20</sub> 1.792, n<sub>27D</sub> 1.447. III and ice react vigorously with the formation of CO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, and H<sub>2</sub>NSO<sub>3</sub>H. III, heated with CNCl, gives 100% II. The reaction mechanism of the reaction between CNCl and SO<sub>3</sub> is discussed on the basis of the electron theory.

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid

RL: PREP (Preparation)  
(prepn. of)

RN 1189-71-5 HCA

CN Sulfuryl chloride isocyanate (CA INDEX NAME)



IT 506-77-4, Cyanogen chloride  
(reaction with SO<sub>3</sub>)

RN 506-77-4 HCA

CN Cyanogen chloride ((CN)Cl) (CA INDEX NAME)



IT 7446-11-9, Sulfur trioxide  
(reactions of, with ClCN)

RN 7446-11-9 HCA

CN Sulfur trioxide (CA INDEX NAME)



CC 10 (Organic Chemistry)

IT 1189-71-5P, Chlorosulfonic acid, anhydride with isocyanic acid 15435-13-9P, 1,4,3,5-Oxathiadiazine, 2,6-dichloro-, 4,4-dioxide

RL: PREP (Preparation)

(prepn. of)

IT 506-77-4, Cyanogen chloride  
(reaction with SO<sub>3</sub>)

IT 7446-11-9, Sulfur trioxide  
(reactions of, with ClCN)